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ABSTRACT

This fourth report in the 1973-74 series presents a compilation of the scores of Michigan's fourth and seventh grade students who participated in the educational assessment. Results of the objective-referenced test data reveal that while none of the objectives was attained by all of the students, performance levels were quite high for some of the objectives. A table summarizes the test results in the form of a distribution chart. This chart shows the number and percentage of objectives attained within each of the ten intervals of pupils. Levels of attainment were generally higher in mathematics than in reading. Another table lists the objectives attained by more than 80 percent of the pupils while the next table lists the objectives attained by fewer than 20 percent of the pupils. The report of results for all grade four and seven objectives in both reading and mathematics is included. Guidelines for the data interpretation indicate some of the possible ways errors can be introduced into test results. (RC)

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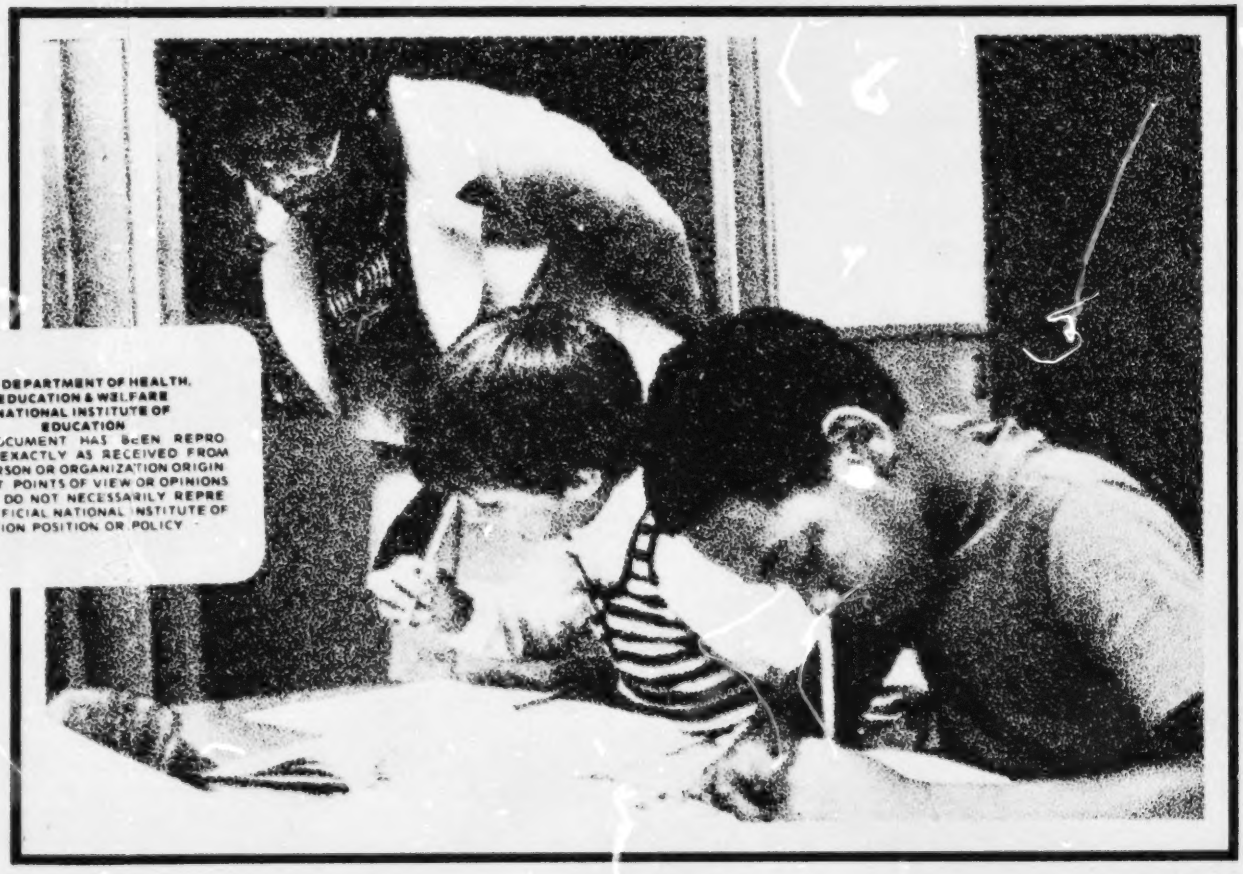
ED120242

State Summary of Results

1973-74

Michigan Educational Assessment Program



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Michigan Department of Education

The Michigan Educational Assessment Program (MEAP) was initiated by the State Board of Education, supported by the Governor, and funded by the Legislature initially through enactment of Act 307 of the Public Acts of 1969, and subsequently under Act 38 of the Public Acts of 1970.

This report is the fourth in the 1973-74 series. It presents a compilation of the scores of the state's fourth and seventh grade students who participated in the educational assessment.

These data are revolutionary to education in Michigan because they — for the first time — reflect student attainment of a specific set of learner performance objectives. These objectives were developed by Michigan educators in an attempt to articulate the skills which our students should achieve in school. The tests used to measure attainment of the objectives were also developed by a cooperative effort between the Michigan Department of Education and local educators. The districts involved were Alma, St. Louis, Jackson, Pontiac, and Waterford — Detroit participated in the test validation phases of the project.

Thanks are due to a large number of individuals and groups for making the Michigan Educational Assessment Program a reality and for continuing to work with it in its fifth year, 1973-74: to the State Board of Education for initially proposing it and continuing to support it, to the Governor and the Legislature for actively supporting it, and to Michigan educators who are assisting with it. The program was designed and administered by the Research, Evaluation and Assessment Services Unit, Michigan Department of Education, with the assistance of Measurement Research Center, Westinghouse Learning Corporation of Iowa City, Iowa, and the advice of the Research, Evaluation, and Assessment Services Advisory Council.

This report was prepared by the Educational Assessment staff, including Mr. Robert J. Huyser, Supervisor, Dr. Daniel E. Schooley, Dr. Thomas H. Fisher, Dr. Edward D. Roeber, and Mrs. June Olsen, with the assistance of Dr. David L. Dorsen, Director, Research, Evaluation and Assessment Services. Questions or requests for additional information relative to this report should be directed to the Educational Assessment staff.

John W. Porter

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highlights of the results

An initial glance at the objective-referenced test data reveals that while none of the objectives was attained by all of the students, performance levels were quite high for some of the objectives. TABLE I summarizes the test results in the form of a distribution chart. This chart shows the number and percentage of objectives attained within each of ten intervals of pupils. One can readily see from this distribution that the levels of attainment were generally higher in mathematics than in reading.

Of equal interest are the objectives attained by most students and those attained by few students. TABLE II lists the objectives attained by more than 80% of the pupils while TABLE III lists the objectives attained by fewer than 20% of the pupils.* The report of results for all grade four and seven objectives in both reading and mathematics is included on pages 7 and 8.

*The cut-off points of 80% and 20% were selected to represent the upper and lower ends of the distribution of attainment.

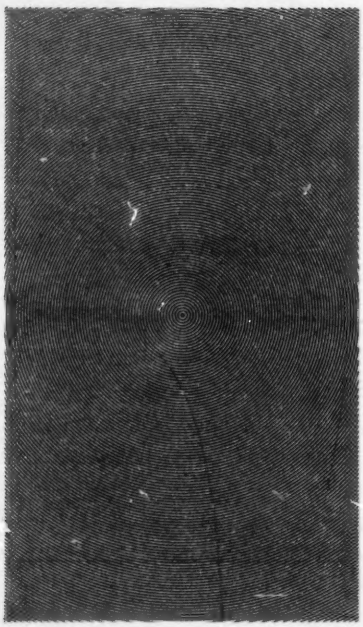
developing an interpret

These data provide needed answers to important questions about the attainment of the minimal performance objectives that were measured in the fall 1973 assessment. But, they also raise questions — questions that need to be asked in order to avoid misinterpreting the data.

To avoid these misinterpretations, one should recall and reexamine the assumptions made in collecting the data: 1) that the objectives describe essential skills, 2) that the skills can and should be attained by all pupils, and 3) that the tests provide reliable and valid measures of those attainments.

The staff of the Michigan Educational Assessment Program is, of course, interested in analyzing the test data on objectives which were attained by most students and on those which were not attained. Two such analyses are being performed by the Michigan Council of Teachers of Mathematics and the Michigan Reading Association. Both organizations are reviewing the test results and the original objectives to determine specific areas which might be improved and to suggest some implications of the data for Michigan educators. Further, the Department curriculum specialists are analyzing the results, in cooperation with demonstration local school districts, to develop a statement of the implications both for the State objectives and for curricula in local districts.

Local educators are encouraged to parallel this state effort by reviewing the objectives and the tests in relation to local curriculum, teaching materials, and instructional practices. In recognizing that low performance on the tests will be of concern, MEAP staff have attempted to cite several possible explanations which should be investigated by local staff. These are:



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ation of the data

1. Students do not have the skill described by the objective.
   a. students cannot learn the skills
   b. students have not been taught the skills
      1. skills are taught later
      2. skills are not taught at all
      3. classroom materials currently in use do not include these skills
   c. instruction in the skills is ineffective
      1. new teaching strategies are needed
      2. available instructional materials are inadequate
      3. staff skills need further development
      4. resources available are inadequate
2. The objective is inappropriate for the fourth (or seventh) grade stduents.
   a. the objective should not be taught (philosophic disagreement)
   b. the objective is not minimal — cannot be attained by all students at this stage of development
   c. the objective describes a skill which presently known teaching practices are unable to impart
3. The test items are not adequate measures of the objective.
   a. the test items may require an inappropriate level of mastery
   b. the reading level of the test items may be too difficult for some students
   c. the mechanical aspects of the test — i.e., separate answer sheets, length of test, use of optical scan answer sheets, etc. may have confused students

The Department of Education has attempted to develop assessment tests which accurately reflect educational attainment of the state's fourth and seventh grade students. These tests were developed with the involvement of Michigan teachers and subject matter specialists. The tests and processing methods reflect the highest level of quality permitted by the present state of the art in objective-referenced testing.

Yet, it must be recognized that the objective-referenced test data — just as any test data — are subject to error. The purpose of this memorandum has been to make a sincere and professional effort to alert you to some of the possible ways errors can be introduced into test results and to urge you to investigate each.

Finally, much information was collected in the September-October testing period which can be used to modify and improve both the performance objectives and the tests. Local educators are encouraged to share with the Department local district analyses of the assessment results and recommendations for improvement of the Program. In this way local educators can join with the Department to find the most effective and efficient way of obtaining assessment information.

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TABLE I

NUMBER AND PERCENT OF OBJECTIVES ATTAINED

Percent of Pupils	Reading				Mathematics			
	Grade 4		Grade 7		Grade 4		Grade 7	
	No.	%	No.	%	No.	%	No.	%
90 - 100	0	0	0	0	4	11	3	7
80 - 89	1	4	1	4	14	40	8	18
70 - 79	2	9	6	26	9	26	11	24
60 - 69	7	30	8	35	6	17	9	20
50 - 59	7	30	7	30	0	0	5	11
40 - 49	2	9	0	0	1	3	3	7
30 - 39	3	13	1	4	0	0	2	4
20 - 29	1	4	0	0	0	0	3	7
10 - 19	0	0	0	0	1	3	1	2
0 - 9	0	0	0	0	0	0	0	0
TOTAL Number of Objectives	23	99*	23	99*	35	100	45	100

*Due to rounding these percentages do not add to 100.

Note: The table shows the number and percentage of objectives attained within each of ten intervals of pupils. For example, 80-89% of the pupils tested attained 1 of the 23 reading objectives (or 4%) at Grade 4; 1 of the 23 reading objectives (or 4%) at Grade 7; 14 of the 35 mathematics objectives (or 40%) at Grade 4; and 8 of the 45 mathematics objectives (or 18%) at Grade 7. At the lower end of the distribution, 20-29% of the pupils tested attained 1 of the 23 reading objectives (or 4%) at Grade 4; none of the 23 reading objectives at Grade 7; none of the 35 mathematics objectives at Grade 4; and 3 of the 45 mathematics objectives (or 7%) at Grade 7.

TABLE II

OBJECTIVES ATTAINED BY AT LEAST 80% OF PUPILS

Objective Number	Percent of Attainment	Short Title of Objective
Grade 4 Reading		
5	83%	Identify method of arranging data
Grade 4 Math		
1	85%	Indicate objects that are the same size
2	90%	Indicate similar geometric shapes
4	90%	Indicate longest and shortest objects
5	87%	Indicate first and last
6	84%	Choose equivalent sets
9	86%	Choose greatest and least number
10	88%	Choose number between two numbers
11	80%	Choose number before or after a number
14	89%	Indicate which of two numbers is greater or less
18	86%	Indicate greater or less/scrambled positions
22	93%	Add two-digit and one-digit number/no carrying
23	86%	Identify operation and sum or difference/no borrowing
25	85%	No. sentences/addition or subtraction — identify operation
27	87%	Subtract one-digit from two-digit number/no borrowing
28	81%	Subtract two-digit from two-digit number/no borrowing
30	84%	Measure objects to nearest inch
31	89%	Telling time
35	91%	Addition or subtraction using place holder
Grade 7 Reading		
3	80%	Choose word appropriate to blank spaces (cloze procedure)
Grade 7 Math		
2	95%	Identify arabic numeral
3	94%	Add 3- and 1-, 2-, and 3- digit numbers
4	88%	Add 2 or 3 numbers
6	83%	Represent repeated addition as multiplication
7	93%	Inverse multiplication
8	88%	Multiply 1-digit number and multiple of 10/100
9	82%	Multiply 2-digit and 1-digit numbers
10	86%	Supply missing factor/multiplication
11	80%	Rewrite division fact as multiplication fact
22	84%	Identify illustrated decimal fraction
42	85%	Complete equation with one/zero

TABLE III

OBJECTIVES ATTAINED BY FEWER THAN 20% OF PUPILS

Objective Number	Percent of Attainment	Short Title of Objective
Grade 4 Reading		
None		
Grade 4 Math		
29	15%	Identify fractional part of set of objects
Grade 7 Reading		
None		
Grade 7 Math		
25	14%	Addition/Subtraction decimal problems: 10th and 100ths

MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM 1973-74 (YEAR 5)

SUMMARY FOR MICHIGAN STATEWIDE

CLASSROOM, SCHOOL AND DISTRICT SUMMARY FORM

DISTRICT CODE:

SCHOOL CODE:

GRADE: FOUR

DATE TESTED: 11/73

STAND SCORE INTERVAL	FREQUENCY	PERCENT IN INTERVAL
65-69	9089	6
55-59	16112	10
45-49	29928	18
35-39	21728	14
25-29	6270	4
15-19	197	1
198446	NUMBER OF PUPILS	

PERCENT OF STUDENTS ANSWERING						STATEWIDE OBJECTIVE MEAN	NUMBER OF PUPILS	OBJ NO	OBJECTIVE	OBJECTIVE CODE
									****** MATHEMATICS ******	
3	5	4	2	6	79	85	158073	1	INDICATE OBJECTS THAT ARE SAME SIZE	AR-I-A-6
9	10	6	4	8	63	71	157721	3	INDICATE OBJECTS ARRANGED FULL TO EMPTY	AR-I-A-16
3	3	4	2	3	84	87	158004	5	INDICATE FIRST AND LAST	AR-I-A-40
17	9	4	3	10	57	67	157211	7	CHOOSE SETS HAVING FEWER NUMBERS	AR-I-B-32
1	3	6	4	9	77	86	158775	9	CHOOSE GREATEST AND LEAST NUMBER	AR-I-B-43
2	4	5	9	12	68	80	158667	11	CHOOSE NUMBER BEFORE OR AFTER A NUMBER	AR-I-B-45
3	5	9	12	17	54	71	158530	13	INDICATE NUMBER BEFORE OR AFTER NUMBER WITHIN A DECADE	AR-I-B-65
3	6	6	8	14	64	78	155641	15	INDICATE THE VALUES OF A SET OF DIMES AND PENNIES	AR-I-B-70
8	10	9	9	19	45	64	158592	17	CHOOSE LIST OF NUMBERS IN ASCENDING ORDER	AR-I-B-81

PERCENT OF STUDENTS ANSWERING						STATEWIDE OBJECTIVE MEAN	NUMBER OF PUPILS	OBJ NO	OBJECTIVE	OBJECTIVE CODE
2	6	6	10	22	55	77	158688	19	INDICATE NEXT NUMBER IN A SEQUENCE	AR-I-B-84
4	16	23	10	16	31	47	157053	21	SELECT SET WITH TWICE AS MANY MEMBERS AS ANOTHER	AR-I-B-86
1	2	3	7	30	56	86	158355	23	IDENTIFY OPERATION AND SUM OR DIFFERENCE / NO BORROWING	AR-II-B-6
1	2	3	8	24	61	85	158266	25	NUMBER SENTENCES / ADDITION OR SUBTRACTION-IDENTIFY OPERATION	AR-II-B-11
1	3	4	5	12	75	87	158826	27	SUBTRACT ONE-DIGIT FROM TWO-DIGIT NUMBER / NO BORROWING	AR-II-B-15
8	21	29	28	10	5	15	156326	29	IDENTIFY FRACTIONAL PART OF SET OF OBJECTS	AR-III-D-1
1	3	3	4	14	75	89	157853	31	TELLING TIME	M-II-A-6
3	6	8	13	49	22	71	155854	33	IDENTIFY TEMPERATURES	M-II-C-1
1	1	2	5	14	77	91	158851	35	ADDITION OR SUBTRACTION USING PLACEHOLDER	AL-1
									****** READING ******	
9	9	8	7	12	54	66	157254	2	INDICATE PHRASES WITH SAME MEANINGS	2.2
8	12	9	9	12	50	62	156011	4	CHOOSE WORD APPROPRIATE TO BLANK SPACES (CLOZE PROCEDURE)	3.2
5	11	14	16	20	34	54	157030	6	ALPHABETIZE WORDS THROUGH FIRST 3 LETTERS	4.4
7	10	8	4	8	63	71	157516	8	INDICATE FICTIONAL SELECTIONS	5.2
4	11	15	18	25	26	51	155468	10	INDICATE TITLE MOST APPROPRIATE FOR SELECTION	7.1
8	18	20	19	19	17	36	155389	12	CHOOSE BEST SUMMARY OF A SELECTION	7.3
8	17	18	19	21	17	38	156447	14	ANSWER QUESTIONS RELATING TO SEQUENCE IN STORIES	9.3
4	10	12	12	19	43	62	156376	16	CHOOSE SENTENCE BEST DESCRIBING HOW CHARACTER FEELS IN STORY	10.3
5	11	12	12	17	43	60	155353	18	MATCH CAUSES WITH EFFECTS	11.1
4	9	14	21	26	26	52	158234	20	ANSWER LOCATIONAL QUESTION ABOUT REFERENCE SOURCES	13.1
5	11	16	19	24	26	50	156500	22	INDICATE MEANINGS, GENERALIZATIONS, CONCLUSIONS NOT EXPRESSED	14.1-14.3

MICHIGAN EDUCATIONAL ASSESSMENT PROGRAM 1973-74 (YEAR 5)

SUMMARY FOR MICHIGAN STATEWIDE

CLASSROOM, SCHOOL AND DISTRICT SUMMARY FORM

DISTRICT CODE:

SCHOOL CODE:

GRADE: SEVEN

DATE TESTED: 11/73

WORD RELATIONSHIPS

STAN. SCORE INTERVAL	FREQUENCY	PERCENT OF INTERVAL
65-69	12631	8
55-59	30595	18
45-49	24575	15
35-39	17191	10
25-29	2611	2
15-19	103	1
167391	NUMBER OF PUPILS	

PERCENT OF STUDENTS ANSWERING						NUMBER OF PUPILS	OBJ. NO.	OBJECTIVE	OBJECTIVE CODE
3	5	6	11	23	53	76168178	1	IDENTIFY NUMBER 100 ... 00 LARGER	AR-I-B-87
0	1	1	3	14	80	94168170	3	ADD 3- AND 1-, 2-, ... 3- DIGIT NUMBERS	AR-II-A-22
4	5	5	8	21	51	78168124	5	SUBTRACT 2- OR 3- DIGIT NUMBER FROM 3- DIGIT NUMBER	AR-II-B-20
1	2	2	2	8	85	93167999	7	INVERSE MULTIPLICATION	AR-II-C-11
2	5	5	6	17	65	82167819	9	MULTIPLY 2-DIGIT AND 1-DIGIT NUMBERS	AR-II-C-15
5	7	5	3	5	75	80167677	11	REWRITE DIVISION FACT AS MULTIPLICATION FACT	AR-II-D-7
7	12	10	9	13	49	62167525	13	DIVISION / ONE-DIGIT DIVISOR, FOUR DIGIT DIVIDEND	AR-II-D-15
6	7	6	5	13	63	76167071	15	IDENTIFY SHADED AREA OF FIGURE WITH FRACTION	AR-III-A-18
15	9	7	5	9	56	65166953	17	IDENTIFY SUM OF 2 FRACTIONS WITH LIKE DENOMINATORS	AR-III-B-6
5	10	10	12	16	47	63166811	19	SUBTRACT FRACTION FROM MIXED NUMBER / LIKE DENOMINATORS	AR-III-C-6
8	10	7	5	10	60	70166696	21	MULTIPLY 2 UNIT FRACTIONS	AR-III-D-6

40	17	10	7	11	15	26167191	23	NAME PLACE VALUES OF DECIMAL FRACTION	AR-IV-A-7
7	21	34	24	10	4	14166489	25	ADDITION / SUBTRACTION DECIMAL PROBLEMS: TENTHS AND 100THS	AR-IV-B-6
3	10	17	32	20	18	38165808	27	IDENTIFY PAIR OF SETS / EQUIVALENT RATIO	AR-VI-15
10	17	11	13	23	26	49164866	29	ESTIMATE AREA OF A POLYGON	M-I-B-8
2	6	15	18	22	37	59165664	31	TELL TIME	M-II-A-10
2	4	7	12	26	49	75168098	33	ADD / SUBTRACT: MONEY	M-II-B-7
7	14	15	15	20	29	49166326	35	SOLVE PROBLEM WITH MONEY VALUES	M-II-B-9
3	8	9	13	18	48	66165425	37	NAME QUADRILATERALS	G-I-A-4
6	8	8	5	5	68	73165103	39	IDENTIFY SURFACES REPRESENTING PLANE OR PART OF PLANE	G-I-B-5
5	12	11	10	21	41	62166098	41	SUPPLY SYMBOL OF EQUALITY / INEQUALITY	AL-5
9	14	13	13	19	33	52167728	43	DISTRIBUTIVE PROPERTY / SUPPLY MISSING VALUE	AL-2
5	34	25	14	9	13	22164212	45	LOCATE POINTS USING A COORDINATE SYSTEM	P-9
9	12	11	12	22	33	55164776	1	MATCH WORDS WITH DEFINITIONS	18.1
3	7	6	4	12	68	80165940	3	CHOOSE WORD APPROPRIATE TO BLANK SPACES (CLOZE PROCEDURE)	19.1
4	7	7	10	20	53	73167229	5	IDENTIFY METHOD OF ARRANGING DATA	20.1
3	7	7	6	11	66	77167183	7	INDICATE FACTUAL SELECTIONS	22.1
4	9	12	14	22	38	60166226	9	INDICATE AUTHOR'S PURPOSE	23.1-23.3
2	6	8	13	29	42	71165695	11	INDICATE PICTURES BEST DESCRIBING MAIN IDEA IN SELECTIONS	24.2
6	12	12	16	26	28	54165400	13	CHOOSE SELECTIONS ALIKE IN IDEAS EXPRESSED	24.4
4	11	15	17	23	31	54165813	15	ANSWER QUESTIONS RELATING TO SEQUENCE IN STORIES	26.3
3	8	11	14	20	44	64165244	17	ANSWER QUESTIONS RELATING TO MOTIVATION	28.1
4	9	12	13	21	41	62164963	19	INDICATE MEANINGS, GENERALIZATIONS, CONCLUSIONS NOT EXPRESSED	29.5
2	7	8	10	23	50	73167046	21	ANSWER LOCATIONAL QUESTION ABOUT REFERENCE SOURCES	31.1
5	10	10	13	29	34	63166553	23	CHOOSE MOST APPROPRIATE CONCLUSION FOR A STORY	32.1